



# PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF CATHARANTHUS ROSEUS

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**Abstract:** Catharanthus Roseus is an important medicinal plant of the Apocynaceae Family. Catharanthus Roseus plant leaves are used for medicinal purpose such as diabetes and cancer treatment.

Aim of the present study is to investigate the phytochemical screening and antibacterial activity of ethanol and methanol extract at 50<sup>o</sup> C of Catharanthus Roseus. The Agar well diffusion method employed to analyze the antibacterial property qualitative screening of phytochemical reveals the presence of alkaloids, terpenoids, glyceroids, flavonoids etc.

**Keyword:** Catharanthus roseus, Phytochemical Screening, Antibacterial activity, E.coli, S. aureus.

**1. Introduction:** Catharanthus Roseus commonly known as “Sadabahar” is available abundantly throughout India. It is reported to have antidiabetic properties. It is an important medicinal plant of the family Apocynaceae which contain alkaloids, flavonoids, terpenoids, Glycosides, tannin, phenol, saponins, carbohydrates, protein, phytosteroids and amino acids. There are two types of Catharanthus Roseus that is pink flowered “Rosea” and white flowers “Alba”. The synonyms of these plants are Vinca Rosea, Lochnera Rosea, and Animosallis Rosea. Other names are Rose Periwinkle, Cape Periwinkle, and Rose Periwinkle. The different parts of plant like flower, leaf and seed were used and their extract were subjected to antimicrobial assays. [1] Catharanthus roseus plant leaves contain more than 70 types of chemical constituents. Due to presence of those alkaloids in it have antihypertensive and antispasmodic properties [2]. The flower petals, seeds and other parts of Catharanthus roseus exhibit antioxidant properties. Thus phenolic compounds have redox properties that act as reducing agents, hydrogen donors, singlet oxygen quenchers or metal chelators. It has multiple applications in foods, cosmetics and pharmaceutical industries. Besides antioxidant activity, these compounds exhibit anti-allergic, anti-inflammatory, antimicrobial, anti-thrombotic, cardio protective and vasodilatory effects. This is influenced by number of geographical and environmental factors [3]. Above activity of those compounds should depend on the methods and solvent used for extraction [4]. Due to the presence of these bioactive phytochemical compounds, plants provide a source of medicines from historical times and now they are an important part of all the world's pharmaceuticals and serve as starting material for drug development [5]. The leaves and flowers of this plant are effective for diabetic patients [6].

## 2. Materials and Methods:

**2.1 Collection, Identification and Authentication of Plant Material:** The plant species namely *Catharanthus roseus* plant leaves were collected by in and around Vijaynagar area Indore District, Madhya Pradesh, India. This is identified and authenticated by Dr. S Roy, Department of Botany, and P.M.B. Gujarati Science College Indore.

**2.2 Extraction of Plant Material *Catharanthus roseus*:** The leaves of *Catharanthus roseus* was air dried under shade for one week and powered using an electrical grinder and stored it in a air tight bottle. Now 250 gm powered extracted with ethanol at 50°C for using 16 hrs Soxhlet apparatus. Thus obtained extract is concentrated to get dry residue and stored in desiccators.

**2.3 Preliminary Qualitative Analysis:** Preliminary Phytochemical screening revealed the presence of several Phytochemical.

**2.4 Phytochemical Analysis of *Catharanthus Roseus* (leaflet):** The leave extract were tested for the presence of chemical constitutes (bioactive compounds) by using the following standard methods.

S.no	Test	Acetone	Ethanol	Aqueous
1.	Phytosteroids	-	-	+
2.	Saponins	-	-	-
3.	Tannins	-	-	+
4.	Phenols	-	+	-
5.	Alkaloids	+	+	+
6.	Terpneoids	+	+	+
7.	Glycosides	-	-	+
8.	Carbohydrates	-	-	+
9.	Favonoids	-	-	+
10.	Protein and Amino acids	-	-	-

Table -1 screening of photochemical analysis *Catharanthus Roseus* Leaf Extract

## 3. Antibacterial Activity of *Catharanthus roseus* :

The plant extract is prepared by soaking the powered plant leaves in methanol as a solvent for 12 hrs in rotator.

**3.1 Antibacterial Assay:** To test antibacterial assay of *Catharanthus roseus* leaf extract were investigated against the pathogenic microorganism *E.coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* by used Agar well diffusion method. 25 ml of nutrient agar medium was allowed to pour on petri plates and allowed to solidify. A culture of 20ml of bacterial culture *E.Coli*, *S.aureus*, *P. aeruginosa* was poured to spread uniformly. Agar well of 5mm in diameter were prepared with the help of a sterilized stainless cask bases. Each well was loaded with 5 ml, 10 ml, 15 ml and 20 ml plant extract, along with disc and plant extract using micro-pipette. The standard antibiotic disc used was Ciproplxacine. Antibacterial activity was evaluated by measuring the diameter of zones of inhibition against the tested bacteria.

Leaf Extract (ml)	E.Coli	Staphylococcus aureus	Pseudomonas aeruginosa
5	09	10	-NI
10	12	17	- NI
15	11	25	- NI
20	10	12	- NI
Ciproplxacine	-	+ 0	- NI

**Table 2: Antibacterial Activity of Catharanthus Roseus Leaf Extract:**

(Zone of Inhibition in mm)

**NI: (No Inhibition)**

**Result and Discussion:** Medicinal value of leaves of this plant is significant to play a role because a wide range of Phytochemicals are present in the extract prepared.

In case of Staphylococcus aureus zone of inhibition decreases while E. coli zone of inhibition increases from 5 ml to 10 ml and for 20 ml again it should decrease in the size of zone of inhibition depends on the extraction procedure and used solvent for it. Catharanthus roseus leaf extract has high activity against S.aureus with a zone of inhibition of 25 mm and E. coli with a zone of 12 mm.

The phytochemical screening, the preliminary phytochemical screening test of Catharanthus roseus leaf extract revealed the presence of alkaloids, terpenoids in leaves. Phytochemical screening test of C.roseus leaf aqueous extract revealed the presence of tannins, phytosteroids, carbohydrates and flavonoid. Alkaloids and terpenoids present in all three extracts. But saponins and protein and amino acids are completely absent in all three extract. In phytosteroids and tannins the aqueous extract is positive.

The antibacterial activity of leaf extract was measured in terms of bacterial growth inhibition zone. The antimicrobial activity found in this present study may be interest in developing new antimicrobial medications.

**Conclusions:** In this phytochemical analysis no. of chemical constituent has been recorded which may be responsible for further medications and pharmacological activities and can be seen as a source of drug. In this study it is concluded that present in the extract prepared using leaflet of Catharanthus Roseus and is found to antibacterial property. The antibacterial activity of the plant extracts in the in vitro level. All the three extracts from Catharanthus roseus plant species, all the extracts were active and developed a zone of inhibition with E.coli and Staphylococcus aureus but an exception with Pseudomonas aeruginosa, which showed no zone of inhibition.

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